fw

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/698,195	10/30/2000	Jan F. Jannink	GIGA-001/01US	6733

25920 7590 01/04/2006

MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER	
WANG, JIN CHENG	
ART UNIT	**PAPER NUMBER**
2672	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

MAILED

JAN 03 2006

Technology Center 2600

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/698,195
Filing Date: October 30, 2000
Appellant(s): JANNINK, JAN F.

Rick von Wohld
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/16/2005 appealing from the Office action mailed 1/12/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: Claims 1, 15-18, 21-23 and 26-27 are not an allowable subject matter and given as new ground of rejection set forth below.

NEW GROUND(S) OF REJECTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-18 and 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, the base claim 15 (26 or 27) recites the "the presentation." Whatever "the presentation" may be, "adjusting" is applied to "the presentation". It cannot be ascertained whether "the presentation" as recited in the claim 15 (26 or 27) is related to a graphical visualization of a particular item j in the data set including the affinity chart for each item j in the data set, or the plurality of the affinity charts for the plurality of items in the data set. Moreover, even if "the presentation" refers to the affinity chart for a particular item in the data set, that particular item in the data set is not particularly pointed out and thus applicant failed to particularly point out which presentation of the affinity chart relating to which item in the data set. In the base claim 15 (26 or 27) also recites "separate presentation for each item of the data set" after "the presentation" being recited, it cannot be ascertained whether "the presentation" as recited earlier refers to the "separate presentation for each item of the data set by generating an affinity chart". It cannot be ascertained whether "the presentation" refers to "a graphical visualization by presenting results separately for each item in a data set." It still cannot be ascertained that "the presentation" means "the affinity charts for all items". Appellant clearly failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16-18 depend upon the base claim 15 and are rejected due to their dependency on the base claim 15.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, the base claim 1 recites the "per object." However, it cannot be ascertained whether "object" as recited refers to "the selected object" or "each related object" of the plurality of the related objects to the selected object.

Moreover, the base claim 1 also recites "a number of affinity charts". The term "affinity charts" are ambiguous for the reasons given below. It cannot be ascertained whether each affinity chart refers to one affinity curve or a plurality of affinity curves, or an affinity graph comprising a plurality of nodes and curves connecting the nodes. It is noted that the Claim 5 set forth the claim limitation of "at least one affinity chart comprising an affinity curve". It seems that each affinity chart could be the same as an affinity curve connecting two nodes.

Appellant clearly failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Moreover, the base claim 21 also recites "a number of affinity charts". The term "affinity charts" are ambiguous for the reasons given below. It cannot be ascertained whether each affinity chart refers to one affinity curve or a plurality of affinity curves, or an affinity graph comprising a plurality of nodes and curves connecting the nodes. It is noted that the Claim 5 set forth the claim limitation of "at least one affinity chart comprising an affinity curve". It seems that each affinity chart could be the same as an affinity curve connecting two nodes.

Claims 22-23 depend upon the base claim 21 and are rejected due to their dependency on the base claim 21.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,330,556	Chilimbi	12-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Allowable Subject Matter

Claim 19 is allowed. The following is an examiner's statement of reasons for allowance of these claims: Nothing in the prior art anticipates or suggests, "using curves to represent a relationship of items related to a particular item positioned at a starting point of the curve, with distance along the curve representing a strength of affinity to the item at the starting point of the curve" in a method for providing graphic visualization of data sets containing a large number of items from said data sets set forth in the base claim 19.

The cited reference to Chilimbi et al. U.S. Patent No. 6,330,556, have taught an affinity graph in which a plurality of affinity charts/curves/edges are shown. Chilimbi discloses a weighted affinity is computed for all structure instances for which this pair of fields has an affinity edge, the data fields of Chilimbi meets the claim limitation of "objects". Chilimbi discloses recreating the object affinity graph by picking a root from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from this picked root and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space wherein nodes are clustered as a group based on the affinity weights, thus establishing the related items to the principal node picked along the at least one affinity chart/curve/edge by rank of the affinity weights. However, Chilimbi does anticipate the claim limitation of "selectively employing color and shading gradations and curve thickness gradations to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other" set forth in the base claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 5, and 7-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Chilimbi et al. U.S. Pat. No. 6,330,556 (hereinafter Chilimbi).

3. Claim 1:

The Chilimbi reference teaches a method of information structuring in a data set containing a plurality of items (see the abstract), comprising:

Ranking related objects based upon relationship strength (e.g., Chilimbi discloses in column 18, lines 27-61 **recreating** the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from **this picked node** and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes are ranked in the order A', C', D', G', F' as a group based on the affinity weights. Chilimbi teaches reordering takes place wherein field layout is optimized for inherent locality by placing fields that show strong affinity close to each other using a greedy algorithm to produce structure field order recommendations from a structure field affinity graph-column 8 in the sense that re-ordering takes place for the layout configuration affinity-Note that

affinity graph encompasses a wide range of graphs as taught by the cited reference including the layout configuration affinity graph), the ranking including for each related object to a selected object, calculating (*e.g., the node a in Fig. 3 is a principal node because it is related to the affinity edge having the highest affinity; column 7, lines 55-65; and the highest affinity edge is determined by the greedy algorithm; column 8, lines 35-50. In column 7, lines 45-55, Chilimbi discloses a weighted affinity is computed for all structure instances for which this pair of fields has an affinity edge, the data fields of Chilimbi meets the claim limitation of "objects"*) an affinity value between each of the related objects and the selected object based upon one or more criteria (*e.g.,* ***In column 8, lines 15-50, Chilimbi discloses field layout affinity calculation wherein the weights correspond to the distance between the fields being a measure of the probability that the fields will end up in the same cache block. Chilimbi discloses placing fields/objects that show strong affinity close to each other to produce structure field order recommendations from a structure field affinity graph by adding the pair fields connected by the maximum affinity edge in the structure field affinity graph to the layout.*** *Chilimbi teaches affinity value between each of the related objects and the selected object is the* ***weight assigned to the edge in the affinity graph to represent the field affinity which is a function of temporal information and execution frequency with each data structure access point as derived from the trace file.*** *Chilimbi further discloses in column 17-18 an object affinity graph is a weighted undirected graph in which nodes represent objects and edges encode temporal affinity between objects. From Chilimbi, it is therefore clear that the weight assigned to the edge in the affinity graph represents the relationship strength between the related object and the selected object. Moreover, Chilimbi teaches in recreation of the affinity graph a temporal ordering of base*

object addresses and picking the object with the highest affinity edge weight and performing a greedy depth-first traversal of the entire object affinity graph starting from the selected object (column 18). Chilimbi discloses visiting the next node connected by the edge with the greatest affinity weight and thus the next node having the greatest affinity weight is picked among the related objects to the selected object. In the picking of the first node and the next node, etc., the related objects are ordered according to the affinity weights and the node with the greatest affinity weight is picked. Therefore, Chilimbi teaches ranking for each related object to a selected object. See Figures 2-3, 5 and 7; column 6-18); and

Ordering each of the related objects in the data set according to the affinity value between the related object and the selected object (*Chilimbi teaches affinity value between each of the related objects and the selected object is the <u>weight</u> assigned to the edge in the affinity graph to represent the field affinity which is a function of temporal information and execution frequency with each data structure access point as derived from the trace file. Chilimbi further discloses in column 17-18 an object affinity graph is a weighted undirected graph in which nodes represent objects and edges encode temporal affinity between objects. From Chilimbi, it is therefore clear that <u>the weight assigned to the edge in the affinity graph represents the relationship strength</u> between the related object and the selected object. Moreover, Chilimbi teaches reordering in the re-creation of the affinity graph wherein field layout is optimized for inherent locality by placing fields that show strong affinity close to each other using a greedy algorithm to produce structure field order recommendations from a structure field affinity graph-column 8 in the sense that re-ordering takes place for the layout configuration affinity. In the recreation of the affinity graph, a temporal ordering of base object addresses occurs and the object with the highest affinity edge*

weight is picked and a greedy depth-first traversal of the entire object affinity graph starting from the selected object is then performed (column 18). Chilimbi discloses visiting the next node connected by the edge with the greatest affinity weight and thus the next node having the greatest affinity weight is picked among the related objects to the selected first object. In the picking of the first node and the next node as related to the first node, etc., the related objects are ordered according to the affinity weights and the node with the greatest affinity weight is picked. Therefore, Chilimbi teaches ordering each of the related objects in the data set according to the affinity value between the related object and the selected object);

Clustering related objects (*In column 18, lines 20-25, Chilimbi teaches* ***hierarchical groupings*** *of objects in TO visualization space. In column 8, lines 15-55, Chilimbi discloses placing fields that show strong affinity close to each other. Chilimbi discloses in column 18, lines 27-61* ***recreating*** *the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from* ***this picked node*** *and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes A', C', D', G' of Fig. 19 are clustered in the first row and after Step 3, nodes F', B', E' of Fig. 19 are clustered in the second row based on the affinity weights*. Moreover Chilimbi discloses that the related database objects are clustered in the same cache block; column 12-13); and

Computing the number of affinity charts per object (*Affinity graph can be found in Fig. 19 in which a plurality of affinity charts or affinity curves are shown. e.g., in column 7, lines 45-55, Chilimbi discloses a weighted affinity is computed for all structure instances for which this*

*pair of fields has an affinity edge, the data fields of Chilimbi meets the claim limitation of "objects". Chilimbi discloses in column 18, lines 27-61 recreating the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing **a greedy depth-first traversal of the entire object affinity graph** starting from **this picked node** and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes A', C', D', G' of Fig. 19 are clustered as a group in the first row and after Step 3, nodes F', B', E' of Fig. 19 are clustered as a group in the second row based on the affinity weights. **This greedy depth-first traversal algorithm performing the traversal of the entire object affinity graph is at least used to determine/compute the number of affinity curves related to the picked node***), wherein the one or more criteria includes a subjective measurement (*e.g., It is noted that applicant misplaced this "wherein" clause here because "one or more criteria is related to "calculating an affinity value" recited earlier in the claim, rather than "computing a number of affinity charts per object". **Therefore, applicant's claim language is not properly construed**. Nevertheless, Chilimibi discloses the one or more criteria may be just an objective measurement such as the weight assigned to the edge in the affinity graph without taking into consideration of a subjective measurement. Nevertheless, Chilimbi teaches affinity graphs can be drawn based on the database objects in the cache block for each object and metrics have been used to evaluate structure field orders wherein the re-ordering takes place by the greedy algorithm taking into consideration of one or more criteria including **the subjective measurement such as the metadata created by the programmer, i.e.,** the programmer's subjective measurement for imposing the constraints which determines the reordering of the layout in the affinity graph,*

wherein the re-ordering accounts for the field constraints defined by the metadata created by the programmer. Moreover, the subjective measurement such as the recommended changes can be incorporated in the generation of the layout recommendation to perform the dynamic reordering of fields and to provide ordered list of data objects. See Figures 2-3, 5 and 7; column 6-10).

Claim 3:

The claim 3 encompasses the same scope of invention as that of claim 2 except additional claimed limitation of objective measurement. However, the Chilimbin reference further discloses the claimed limitation of the objective measurement (Metrics have been used to evaluate structure field orders wherein the re-ordering takes place by the greedy algorithm taking into consideration of the subjective measurement such as the metadata created by the programmer wherein the re-ordering accounts for the field constraints defined by the metadata. See column 6-10).

4. Claim 5:

The Chilimbin reference teaches a method of generating a graphic layout, comprising:

Selecting a principal node for the graphical layout (*Chilimbi discloses in column 18, lines 27-61* ***recreating*** *the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from* ***this picked node*** *and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1,*

nodes are ranked in the order A', C', D', G', F' based on the affinity weights wherein A' of Fig. 19 is a principal node. Chilimbi discloses the node a; in figures 2-3, 5 and 7 as a principal node);

Generating at least one affinity chart in connection with the principal node (*Affinity graph can be found in Fig. 19 in which a plurality of affinity charts/curves/edges are shown. e.g., in column 7, lines 45-55, Chilimbi discloses a weighted affinity is computed for all structure instances for which this pair of fields has an affinity edge, the data fields of Chilimbi meets the claim limitation of "objects". Chilimbi discloses in column 18, lines 27-61* ***recreating*** *the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from* ***this picked node*** *and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes A', C', D', G' of Fig. 19 are clustered in the first row and after Step 3, nodes F', B', E' of Fig. 19 are clustered in the second row based on the affinity weights. In figures 2-3 and 7; column 6-18; Chilimbi teaches reordering in the re-creation of the affinity graph wherein edges between data elements in different data structures are not even put in the model for building the affinity graph-column 7 and field layout is optimized for inherent locality by placing fields that show strong affinity close to each other using a greedy algorithm to produce structure field order recommendations from a structure field affinity graph-column 8 in the sense that re-ordering takes place for the layout configuration affinity. In the recreation of the affinity graph, a temporal ordering of base object addresses occurs and the object with the highest affinity edge weight is picked and a greedy depth-first traversal of the entire object affinity graph starting from the selected object is performed-column 18. Chilimbi discloses visiting the next node connected by the edge with the*

greatest affinity weight and thus the next node having the greatest affinity weight is picked among the related objects to the selected object. In the picking of the first node and the next node, etc., the related objects are ordered according to the affinity weights and the node with the greatest affinity weight is picked. Therefore, Chilimbi teaches picking the first node with the highest affinity edge as the principal node in the reordering and recreation of the affinity graph), the at least one affinity chart comprising an affinity curve (See figures 2-3, 5 and 7 and 19); and

Sequentially establishing related items along the at least one affinity chart by rank (*Affinity graph can be found in Fig. 19 in which a plurality of affinity charts or affinity curves are shown. e.g., in column 7, lines 45-55, Chilimbi discloses a weighted affinity is computed for all structure instances for which this pair of fields has an affinity edge, the data fields of Chilimbi meets the claim limitation of "objects". Chilimbi discloses in column 18, lines 27-61* ***recreating*** *the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from* **this picked node** *and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes A', C', D', G' of Fig. 19 are clustered in the first row and after Step 3, nodes F', B', E' of Fig. 19 are clustered in the second row based on the affinity weights, thus establishing the related items C', D' and G' along the at least one affinity chart/curve/edge by rank of the affinity weights. Chilimbi further discloses that* Metrics have been used to evaluate structure field orders wherein the re-ordering takes place by the greedy algorithm taking into consideration of the subjective measurement such as the metadata created by the programmer wherein the re-ordering accounts for the field constraints defined by the metadata. See column 6-10).

Claim 7:

The claim 7 encompasses the same scope of invention as that of claim 5 except additional claimed limitation of a list of related items. However, the Chilimbin reference further discloses the claimed limitation of a list of related items (such as the neighboring fields in the affinity graph; see column 9 and Figures 2-3, 5 and 7).

Claim 8:

The claim 8 encompasses the same scope of invention as that of claim 5 except additional claimed limitation of positioning the selected principal node at a prominent location in said graphical layout. However, the Chilimbin reference further discloses the claimed limitation of positioning the selected principal node at a prominent location in said graphical layout (the nodes a, b, c have been placed in the prominent locations in the graphical layout as shown in figure 2-3, 5 and 7).

Claim 9:

The claim 9 encompasses the same scope of invention as that of claim 5 except additional claimed limitation of computing the size of the item. However, the Chilimbin reference further discloses the claimed limitation of computing the size of the item (using the field sizes; column 9).

Claim 10:

The claim 10 encompasses the same scope of invention as that of claim 5 except additional claimed limitation of the gradients to suggest item affinity level. However, the Chilimbin reference further discloses the claimed limitation of the gradients to suggest

item affinity level (hot object(class) or cold object(class) and clustering or coloring, and attributes and/or levels of objects in the affinity graph to indicate the affinity level; see Figure 5 and column 12-13).

Claim 11:

The claim 11 encompasses the same scope of invention as that of claim 10 except additional claimed limitation of the color gradient. However, the Chilimbin reference further discloses the claimed limitation of the color gradient (hot object(class) or cold object(class) and clustering or coloring, and attributes and/or levels of objects in the affinity graph to indicate the affinity level; see Figure 5 and column 12-13).

Claim 12:

The claim 12 encompasses the same scope of invention as that of claim 10 except additional claimed limitation of the size gradient. However, the Chilimbin reference further discloses the claimed limitation of the size gradient (e.g., Figure 5).

Claim 13:

The claim 13 encompasses the same scope of invention as that of claim 5 except additional claimed limitation of preventing overlap of related items. However, the Chilimbin reference further discloses the claimed limitation of preventing overlap of related items (e.g., field constraints preventing information overlap of related items; column 9-10).

(10) Response to Argument

On Pages 7-8, Appellant argues in essence with respect to the claim 1 and similar claims that:

(A) "Fig. 3 of the Chilimbi et al. reference clearly illustrates that the reference does not teach each and every element claimed by Applicant. Specifically, the reference does not teach, for example, ranking related objects based on relationship strength, and calculating an affinity value between each of the related objects and the selected objects."

In response to the arguments in (A), apparently, appellant is incorrect by stating that "Fig. 3 of Chilimbi does not teach each and every element claimed by Appellant" in which appellant ignores Chilimbi's teaching as a whole and ignores the other features besides Fig. 3 because the prior art contains a total of 22 pages of specification that teaches the claimed invention set forth in the appellant's claim 1.

For example, <u>the node a in Fig. 3 is a principal node because it is related to the affinity edge having the highest affinity; column 7, lines 55-65; and the highest affinity edge is determined by the greedy algorithm and the node in the pair of fields connected by the maximum affinity edge is thus picked. The data field selected (and added to the affinity graph) is the one that increases configuration locality by the largest amount at that point in the computation; column 8, lines 35-50</u>.

Chilimbi discloses in column 18, lines 27-61 <u>recreating the object affinity graph</u> by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from **<u>this picked node</u>** and visiting

the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes are **ranked in the order A', C', D', G', F' based on the affinity weights**.

Elsewhere Chilimbi teaches reordering takes place wherein field layout is optimized for inherent locality by placing fields that show strong affinity close to each other using a greedy algorithm to produce structure field order recommendations from a structure field affinity graph- column 8 in the sense that re-ordering takes place for the layout configuration affinity-Note that affinity graph encompasses a wide range of graphs as taught by the cited reference including the layout configuration affinity graph.

In column 7, lines 45-55, Chilimbi discloses a weighted affinity is **computed** for all structure instances for which this pair of fields has an affinity edge, clearly, **the data fields** or **data elements** of Chilimbi meets the claim limitation of "objects".

In column 8, lines 15-50, Chilimbi discloses field layout affinity calculation wherein the weights correspond to the distance between the fields being a measure of the probability that the fields will end up in **the same cache block**. Chilimbi discloses placing fields/objects that show strong affinity close to each other to produce structure field order recommendations from a structure field affinity graph by adding the pair fields connected by the maximum affinity edge in the structure field affinity graph to the layout.

Chilimbi teaches affinity value between each of the related objects and the selected object is the **weight assigned to the edge in the affinity graph to represent the field affinity which is a function of temporal information and execution frequency with each data structure access point as derived from the trace file**. Chilimbi further discloses in column 17-18 an

object affinity graph is a weighted undirected graph in which nodes represent objects and edges encode temporal affinity between objects. From Chilimbi, it is therefore clear that the weight assigned to the edge in the affinity graph represents the relationship strength between the related object and the selected object.

On Page 7, Appellant argues in essence with respect to the claim 1 and similar claims that:

> (B) "The Chilimbi et al. reference fails to teach (or suggest) each and every element as set forth in Applicant's claims…There is no one selected object with affinity to other related objects, but rather an examination of a plurality of data structures and the grouping of such structures together for greater efficiency."

In response to the arguments in (B), Chilimbi discloses a selected object and other related objects. For example, Chilimbi discloses in column 18, lines 27-61 **recreating** the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from **this picked node** (selected object) and visiting the next unvisited node (related objects) connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes are **ranked in the order A', C', D', G', F' based on the affinity weights**. It is clear that the selected object is the node A' and the related objects are C', D' and G' as shown in Fig. 19 as determined by Chilimbi's algorithm.

On Page 9, Appellant argues in essence with respect to the claim 1 and similar claims that:

> (C) "Chilimbi et al. do not teach each and every one of these same elements. The field of the Chilimbi et al. invention is 'computer memory management and in particular to optimizing cache utilization by modifying data structures…It is noted that the word 'data' is identified as common to both the instant application and the reference patent. However, the present application is in the field of visualization of data sets, and the reference patent is in the field of optimizing cache utilization by modifying data structures. As stated above, whether or not the art is analogous may not be relevant to the determination of anticipation, it is relevant to the interpretation of the language used in both the application and the reference. Applicant respectfully submits that data sets and data structures are not the same, and are not the same elements under 35 U.S.C. 102."

In response to the arguments in (C), although Chilimbi teaches computer memory management, Chilimbi also teaches visualization of data sets in which the visualization of the data objects/data fields/data elements are drawn, for example, in 5, 7, and 19, and particularly, the object affinity graphs or the layout configuration affinity graphs disclosed throughout the specification of Chilimbi's invention.

It is noted that appellant's argument that "data sets and data structures are not the same" is irrelevant to the claim limitations set forth in the claim 1 and similar claims because in the body of the claim 1, appellant only recites "objects" rather than "data sets". "Data set" appears in the PREAMBLE of the claim 1.

Moreover, "data set" is a broader term than "data elements", "data fields", "objects" and "data fields in a data structure" as taught in Chilimbi. For example, Chilimbi discloses data items or data fields in which nodes representing the data items or data fields in a data structure. The data items or data fields are objects. Chilimbi teaches both data elements and data fields as data entities in the database and the nodes in the affinity graph represent the data elements and data fields in the database. Chilimbi also teaches objects in the object oriented programming to represent the data elements and data fields in the database in which Chilimbi's algorithm is used to derive the interrelationship of the data items/fields (See Figs. 6 and 19).

Moreover, the node a in Fig. 3 is a principal node because it is related to the affinity edge having the highest affinity; column 7, lines 55-65; and the highest affinity edge is determined by the greedy algorithm and the node in the pair of fields connected by the maximum affinity edge is thus picked. The data field selected (and added to the affinity graph) is the one that increases configuration locality by the largest amount at that point in the computation; column 8, lines 35-50.

Finally, in Fig. 19, the object affinity graph is shown, and ranking of the nodes representing the data fields are performed, with A', C', D' and G' being placed in the first row in the TO space. In the FROM space of the visualization presentation in Fig. 19, affinity graph of the nodes representing the data items/fields are shown in which the affinity graph is **re-created** and ranking, clustering and computing steps recited in the claim 1 are performed. Therefore, Chilimbi fulfills the claim limitations set forth in the claim 1.

On Page 10, Appellant argues in essence with respect to the claim 1 and similar claims that:

(D) "The 'objects' taught by Chilimbi et al. are the objects of object oriented programming. The data structures are just that, 'fields in relational databases may also be thought of as individually addressable data elements (col. 6, lines 12-13). The Chilimbi et al. reference does not teach a method of information structuring in a data set containing a plurality of items."

In response to the arguments in (D), Appellant argues with a limitation set forth in the PREAMBLE of the claim 1. As previously pointed out by the Examiner, in the body of the claim 1, for example, appellant recites "objects" rather than "data set". "Data set" only appears in the PREAMBLE of the claim 1.

Moreover, "data set" is a broader term than "data elements", "data fields", "objects" and "data fields in a data structure" as taught in Chilimbi. For example, Chilimbi discloses data items or data elements in which nodes representing the data items or <u>data elements in a data structure</u>. The data items or data elements are data objects and therefore meets the claim limitation of "objects'. In Fig. 19, the object affinity graph is shown, and ranking of the nodes representing the data elements are performed, with A', C', D' and G' being placed in the first row in the TO space. These data elements are specifically plotted as represented by the nodes in the object affinity graph and represented by the rectangle areas in <u>**the FROM and TO spaces in the visualization spaces**</u>.

In the FROM space of the visualization presentation in Fig. 19, affinity graph of the nodes representing the data elements are shown in which the affinity graph is **re-created** and ranking, clustering and computing steps recited in the claim 1 are performed. Therefore, Chilimbi fulfills the claim limitations set forth in the claim 1.

On Page 10, Appellant argues in essence with respect to the claim 1 and similar claims that:

> (E) "Chilimbi et al. teach data elements in data structures of cache lines and cache blocks, but do not teach information structuring in a data set and ranking of interrelated items in a data set. Applicants claim the ranking of the related objects in a data set, and such objects are not 'objects' of object oriented programming, and cannot be reasonably interpreted to be objects of object oriented programming, instantiation of a class, etc. Chilimbi et al. do not teach each and every element as claimed by Applicant."

In response to the arguments in (E), Appellant argues with a limitation set forth in the PREAMBLE of the claim 1. As previously pointed out by the Examiner, in the body of the claim 1, for example, appellant only recites "objects" rather than "data set". "Data set" only appears in the PREAMBLE of the claim 1.

Moreover, "data set" is a broader term than "data elements", "data fields", "objects" and "data fields in a data structure" as taught in Chilimbi. For example, Chilimbi discloses data items or data fields in which nodes representing the data items or data fields in a data structure. The data items or data fields are objects. Chilimbi teaches both data elements and data fields as data

entities in the database and the nodes in the affinity graph represent the data elements and data fields in the database. Chilimbi also teaches objects in the object oriented programming to represent the data elements and data fields in the database in which Chilimbi's algorithm is used to derive the interrelationship of the data items/fields (See Figs. 6 and 19).

Moreover, the node a in Fig. 3 is a principal node because it is related to the affinity edge having the highest affinity; column 7, lines 55-65; and the highest affinity edge is determined by the greedy algorithm and the node in the pair of fields connected by the maximum affinity edge is thus picked. The data field selected (and added to the affinity graph) is the one that increases configuration locality by the largest amount at that point in the computation; column 8, lines 35-50.

Finally, in Fig. 19, the object affinity graph is shown, and ranking of the nodes representing the data elements are performed, with A', C', D' and G' being placed in the first row in the TO space. These data elements are specifically plotted nodes in the object affinity graph and represented by the rectangle areas in the FROM and TO spaces as the visualization spaces.

In the FROM space of the visualization presentation in Fig. 19, affinity graph of the nodes representing the data elements are shown in which the affinity graph is re-created and ranking, clustering and computing steps recited in the claim 1 are performed. Therefore, Chilimbi fulfills the claim limitations set forth in the claim 1.

On Page 10, Appellant argues in essence with respect to the claim 5 and similar claims that:

(F) "Applicant has also claimed the selecting of a principal node for a graphical layout. The Chilimbi et al. reference also does not teach this element. Applicant respectfully submits that Chilimbi et al. do not teach the selection of a principle node. As illustrated above in Figure 3 of the Chilimbi et al. reference, no one node is selected as a principle node, since all ndoes are interconnected. The reference, therefore, does not teach each and every element of Applicant's claims, and therefore does not anticipate the claims under 35 USC 102."

In response to the arguments in (F), Chilimbi discloses in column 18, lines 27-61 recreating the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from **<u>this picked node</u>** and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes are ranked in <u>the order A', C', D', G', F' based on the affinity weights</u> wherein A' of Fig. 19 is a picked node and thus is a principal node or a first node.

<u>Moreover, the node a in Fig. 3 is a principal node because it is related to the affinity edge having the highest affinity; column 7, lines 55-65; and the highest affinity edge is determined by the greedy algorithm and the node in the pair of fields connected by the maximum affinity edge is thus picked. The data field selected (and added to the affinity graph) is the one that increases configuration locality by the largest amount at that point in the computation; column 8, lines 35-50</u>.

On Page 11, Appellant argues in essence with respect to the claim 5 and similar claims that:

(G) "Applicant claims that the at least one affinity chart comprises an affinity curve. The Office supports the rejection by a vague reference to Figures 2-3, 5 and 7. Figure 2 is pseudo code for a program written in a language such as C which includes individually addressable data elements (col. 6, lines 3-5). Figure 3 is a field affinity graph (col. 6, line 58)...The Chilimbi et al. does not teach an affinity curve."

In response to the arguments in (G), throughout Chilimbi's specification, affinity graphs and graphical visualization of the data fields are disclosed. For example, Chilimbi discloses an object affinity graph in Fig. 19 in which a plurality of affinity charts or affinity curves are shown. Chilimbi discloses in column 18, lines 27-61 **recreating** the object affinity graph by picking a node from the set of roots with the highest affinity edge weight, performing a greedy depth-first traversal of the entire object affinity graph starting from **this picked node** and visiting the next unvisited node connected by the edge with greatest affinity weight and laying out all affinity graph nodes in the TO space. After Step 1, nodes A', C', D', G' of Fig. 19 are clustered in the first row and after Step 3, nodes F', B', E' of Fig. 19 are clustered in the second row based on the affinity weights, thus establishing the related items C', D' and G' along the at least one affinity chart/curve/edge by rank of the affinity weights.

Moreover, in the field affinity graph of Fig. 3, affinity curves connecting the nodes are found wherein the affinity weights are associated with the affinity curves. The curves having the

affinity weights representing the affinity of the nodes in the affinity graph meets the claim limitation of "affinity curves".

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (~~9~~ 6) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any

amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

jcw

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

Leo Boudreau

Conferees:

Jin-Cheng Wang
Jinchengwang

Mike Razavi MR

Matthew Bella MB

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Leo Boudreau
Acting Director, TC 2600